

Best Management Practices for Agriculture

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**Natural Resources
Conservation Service**

Best Management Practices for Agriculture

The success of agriculture in Connecticut requires:

 **Economic viability**

 **Natural resources use and protection**

 **Social, cultural, and political support**

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Conservation practices and systems address:

- **Water Quality**
- **Water Quantity**
- **Soil Quality**
- **Air Quality**



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Conservation practices and systems address:

- **Energy Conservation**
- **Animal Health and Welfare**
- **Plant Health**
- **Fish and Wildlife Habitat**

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Well managed agriculture systems provide:



- **Food, Fiber, and Wood Products**
- **Clean and Abundant Water**
- **Clean Air**
- **Fish and Wildlife Habitat**



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Well managed agriculture systems provide:

- **Scenic Vistas**



- **Open Space**

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Well managed agriculture systems provide:

- **Cultural Heritage**
- **Support to Local Economies**



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Well managed agriculture systems provide:

- **Enhanced Quality of Life**



Social Awareness



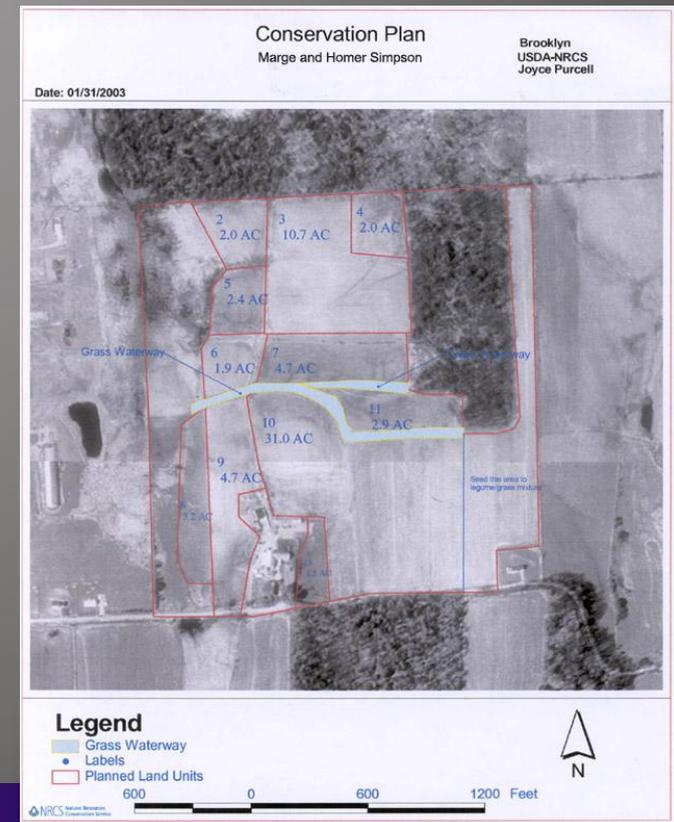
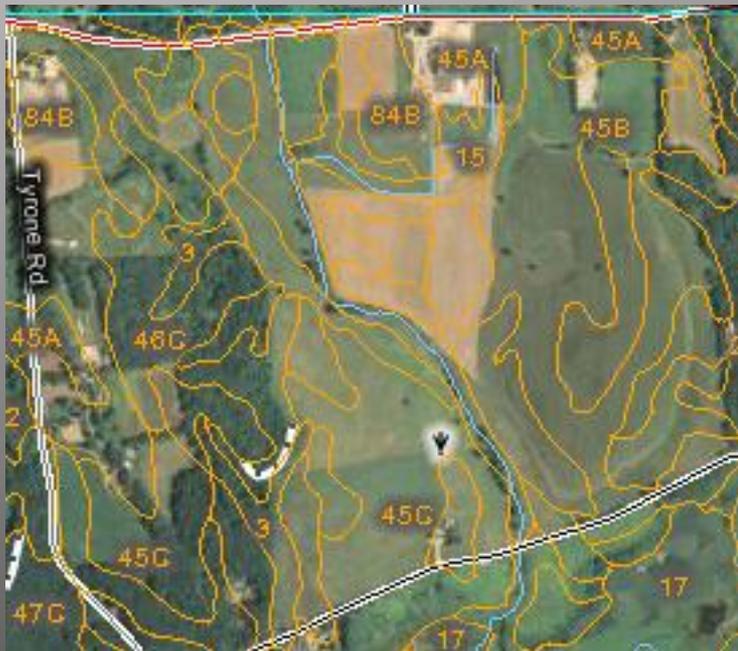
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Best management practices, also called conservation practices, are implemented based on a conservation plan.

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Conservation planning steps include:

- Taking an inventory of resource conditions



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Conservation planning steps include:

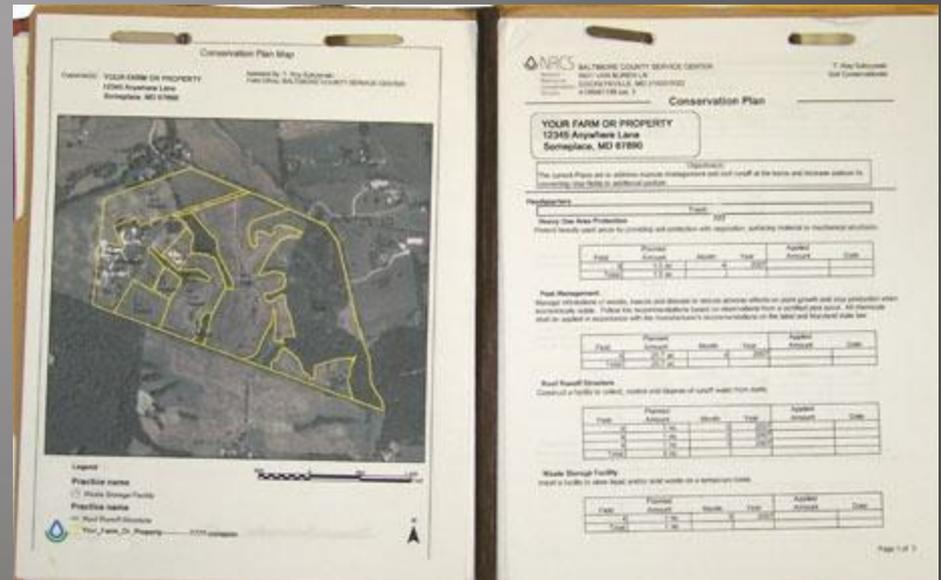
- **Identifying issues and opportunities with the farmer**



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Conservation planning steps include:

- Developing choices and solutions
- Scheduling implementation of practices
- Evaluating effectiveness of the plan



Best Management Practices for Agriculture

Cropping Systems

- Cross slope tillage
- Contour strip cropping



- **Residue management**

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Cropping Systems

- **Cover crops / green manure**



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Cropping Systems

- **Crop rotation**
- **Grassed waterways**



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Cropping Systems

- **Nutrient management**
- **Pest Management**



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Cropping Systems



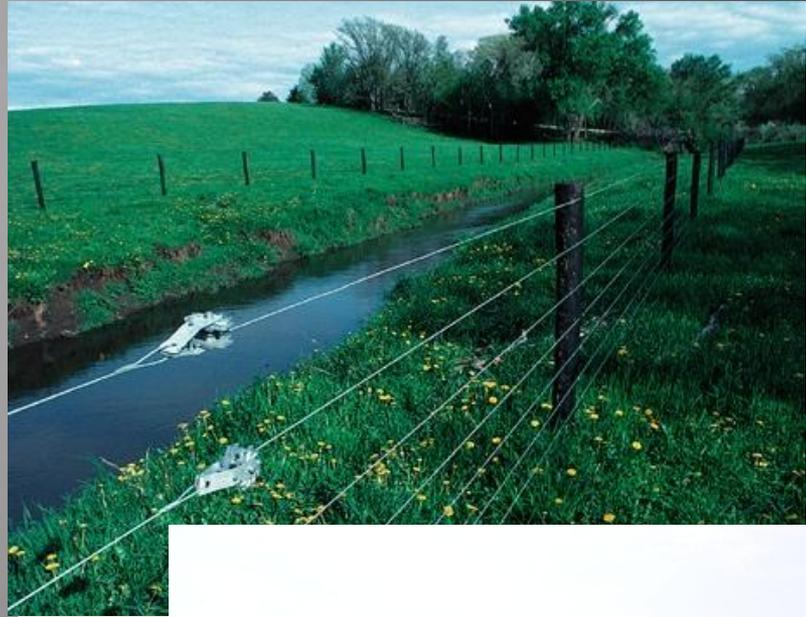
- **Irrigation water management**
- **Buffers and field borders**



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Grazing Systems

- **Rotational grazing**
- **Fencing systems**



- **Animal trails and walkways**



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Grazing Systems

- **Water systems**
- **Nutrient management**
- **Pathogen control**



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Manure / Waste Management

- **Waste storage structures**



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Manure / Waste Management

- **Heavy use/sacrifice areas**
- **Composting systems**



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Manure / Waste Management

- **Transfer and application**
- **Nutrient management**



- **Septic systems**
- **Silage leachate collection**

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Air Quality / Energy Conservation

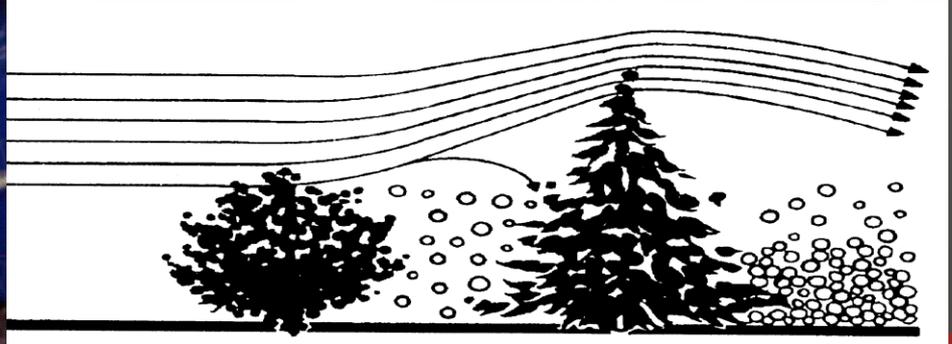
- **Solar electric systems**
- **Solar water heaters**
- **Solar fence systems / pumps**
- **Wind turbines**
- **Manure digesters**



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Air Quality / Energy Conservation

- **Buffer plantings**
- **Soil quality improvement**
- **Heat curtains**
- **Ridge vents**



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Farmstead Management

- **Gutter systems**
- **Storm drains / subsurface drains**
- **Sediment basins**



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Farmstead Management

- **Diversions / waterways**
- **Wellhead protection**
- **Covered heavy use areas**



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Habitat Management

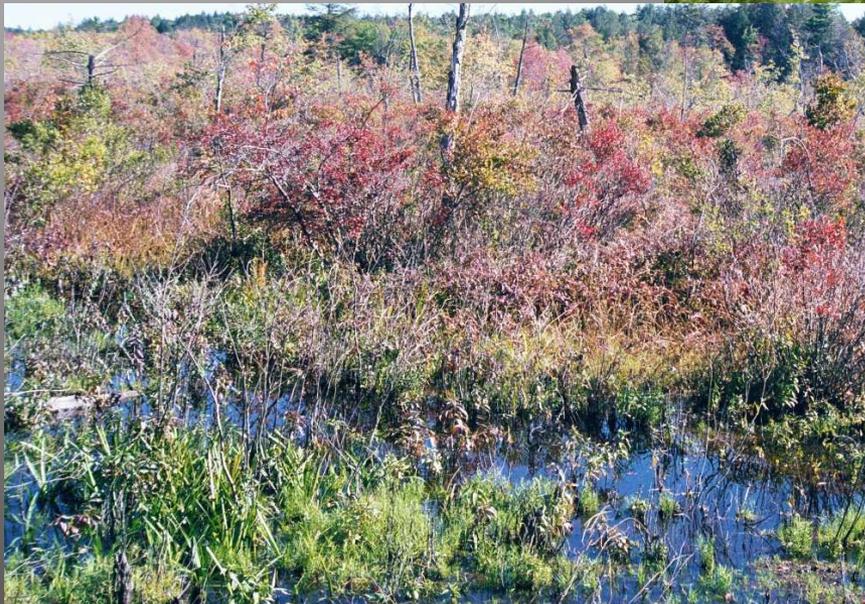
- **Riparian buffers**
- **Streambank protection**
- **Food plots**
- **Pollinator plantings**



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Habitat Management

- **Woodland management**
- **Delayed mowing**
- **Wetland restoration**
- **Invasives control**



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How much does it cost?

A few examples:

- Six months of waste storage for 150 – 200 cows? \$300,000
- Thermal curtain for simple greenhouse? \$40,000 (\$1.40 ft²)
- Micro-irrigation? \$2,000 per acre
- Animal trails? \$15,000 per 1000 feet
- Grass seeding? \$4 - \$6 per acre.

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Natural Resources Conservation Service

Helping People Help the Land Through ...

- **Conservation Planning and Technical Consultation**
- **Conservation Implementation**
- **Technical Standards and References**

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Natural Resources Conservation Service

• Technical Standards and References

The screenshot shows the NRCS website interface. At the top, there is a navigation bar with links for Home, About NRCS, Features, Newsroom, Programs, Technical Resources, Partnerships, FAQ's, and Contact NRCS. Below this is a search bar with the text "Search" and "Enter Keywords" followed by a "GO" button. The main content area is titled "Welcome to eFOTG" and includes a sub-heading "What is eFOTG?". The text explains that technical guides are primary scientific references for NRCS, containing information about soil, water, air, and related plant and animal resources. It also states that these guides are localized for specific geographic areas and are referred to as Field Office Technical Guides (FOTGs). A sidebar on the left lists "Technical Resources" with categories such as Agronomy, Wind and Water Erosion, Air Quality, Conservation Practices, Cultural Resources, Ecological Sciences, Economics Resources, Engineering Tools and Resources, Forestry & Agroforestry, Invasive Species, and Maps, Imagery, and Data Resources. A red arrow points from the "What is eFOTG?" section to the right-hand page.

The screenshot shows the NRCS Conservation Practice Standard for Grassed Waterway. The title is "NATURAL RESOURCES CONSERVATION SERVICE CONSERVATION PRACTICE STANDARD CONNECTICUT/RHODE ISLAND GRASSED WATERWAY (Acre) Code 412". The page is divided into several sections: DEFINITION, PURPOSE, CONDITIONS WHERE PRACTICE APPLIES, CRITERIA, and Capacity. A red arrow points from the left page to this section.

DEFINITION
A natural or constructed channel that is shaped or graded to required dimensions and established with suitable vegetation.

PURPOSE
This practice may be applied as part of a conservation management system to support one or more of the following purposes:

- to convey runoff from terraces, diversions, or other water concentrations without causing erosion or flooding.
- to reduce gully erosion,
- to protect/improve water quality when used in conjunction with additional land treatment practices.

CONDITIONS WHERE PRACTICE APPLIES
In areas where added water conveyance capacity and vegetative protection are needed to control or prevent erosion resulting from concentrated runoff and where such control can be achieved by using this practice alone or combined with other conservation practices. Also in areas where a waterway is one practice included within a more comprehensive pollution abatement system.

CRITERIA
General Criteria Applicable to All Purposes
Grassed waterways shall be planned, designed, and constructed to comply with all Federal, State, and local laws and regulations.

Capacity. The minimum capacity shall be that required to convey the peak runoff expected from a storm of 10-year frequency,

24-hour duration. When the waterway slope is less than one percent, out-of-bank flow may be permitted if such flow will not cause excessive erosion.

Velocity. Design velocities shall not exceed those obtained by using the procedures, "n" values, and recommendations in the NRCS Engineering Field Handbook (EFH) Part 650, Chapter 7, or Agricultural Research Service (ARS) Agricultural Handbook 667, Stability Design of Grass-lined Open Channels.

Width. The bottom width of trapezoidal waterways shall not exceed 100 feet unless multiple or divided waterways or other means are provided to control meandering of low flows.

Side Slopes. Side slopes shall not be steeper than a ratio of two horizontals to one vertical. They shall be designed to accommodate the equipment anticipated to be used for maintenance and tillage/harvesting equipment that will cross the waterway.

Depth. The minimum depth of a waterway that receives water from terraces, diversions, or other tributary channels shall be that required to keep the design water surface elevation at, or below the design water surface elevation in the tributary channel, at their junction when both are flowing at design depth.

Freeboard above the designed depth shall be provided when flow must be contained to prevent damage. Freeboard shall be provided above the designed depth when the

NRCS-CT-RI
December 2000

Conservation practice standards are reviewed periodically, and updated if needed. To obtain the current version of this standard, contact the Natural Resources Conservation Service.

(412-1)

- Electronic Access to Field Office
- Conservation Standards and S
- Conservation Resources

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Natural Resources Conservation Service

- Resource Inventories
- Financial Assistance
 - Cost-share incentives
 - Easements – stewardship payments
 - Grants

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NRCS Conservation Programs

\$12-15 Million per year; Technical and Financial Assistance up to 90% Cost-Share

- **Agricultural Management Assistance Program** – *to address water quality and quantity*
- **Environmental Quality Incentives Program** – *to address natural resource concerns on agricultural and forest land*

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NRCS Conservation Programs *(continued)*

- **Wildlife Habitat Incentive Program** –
to restore fish and wildlife habitat on private land
- **Conservation Stewardship Program** –
to compensate farmers for stewardship

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NRCS Conservation Programs *(continued)*

- **Grassland Reserve Program** – *to restore and protect grassland agriculture and habitat*
- **Wetlands Reserve Program** – to restore and protect wetlands

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NRCS Conservation Programs *(continued)*

- **Farm and Ranch Land Protection Program** – *partners with entities to protect farms*
- **Conservation Reserve Program (FSA Program)** – to take sensitive acreage out of production

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Natural Resources Conservation Service

Contact Information

Kip Kolesinskas, State Soil Scientist – 860.871.4047

Brooklyn Service Center – 860.774.0224

Norwich Service Center – 860.887.3604

Torrington Service Center – 860.626.8258

Wallingford Service Center – 203.269.7509

Windsor Service Center – 860.688.7725

State Office, Tolland – 860.871.4011

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Natural Resources Conservation Service

Conservation Partners

- Cooperative Extension System
- CT Agriculture Experiment Station
- CT Department of Agriculture
- CT Department of Environmental Protection
- USDA Farm Services Agency
- USDA Rural Development
- Conservation Districts

Questions?

